

# Checking memory usage of a batch job using gm.x

## Category: Memory Usage on Pleiades

### DRAFT

This article is being reviewed for completeness and technical accuracy.

NAS staff member Henry Jin created a tool called *gm.x* (available under `/u/scicon/tools/bin`) that reports the memory usage at the end of a run from each process.

Add `/u/scicon/tools/bin` to your `$PATH` so that you can invoke *gm.x* without the full path.

Use the `-h` option to find out what types of memory usage can be reported:

```
pfel%gm.x -h
gm - version 1.0
usage: gm.x [-opts] a.out [args]
    -hwm      ; high water mark (VmHWM)
    -rss      ; resident memory size (VmRSS)
    -wrss     ; weighted memory size (WRSS)
    -v        ; verbose flag
Default is by environment variable GM_TYPE (def=WRSS)
```

Note that the `-rss` option reports the last snapshot of resident set size usage captured by the kernel. With the `-wrss` option, *gm.x* calls the system function *get\_weighted\_memory\_size*. More information about this function can be found from the man page **man get\_weighted\_memory\_size**.

*gm.x* can be used for either OpenMP or MPI applications (linked with either SGI's MPT, MVAPICH or Intel MPI libraries) and you do not have to recompile your application for it. A script called *gm\_post.x* then takes the per process memory usage information and computes the total memory used and the average memory used per process.

To use *gm.x* for an MPI code, add *gm.x* after the `mpiexec` options. For example:

```
mpiexec -np 4 gm.x ./a.out
Memory usage for (r1i1n0,pid=9767): 1.458 MB (rank=0)
Memory usage for (r1i1n0,pid=9768): 1.413 MB (rank=1)
Memory usage for (r1i1n0,pid=9770): 1.413 MB (rank=3)
Memory usage for (r1i1n0,pid=9769): 1.417 MB (rank=2)
```

```
mpiexec -np 4 gm.x ./a.out | gm_post.x
Number of nodes      = 1
Number of processes  = 4
Processes per node   = 4
Total memory         = 5.701 MB

Memory per node      = 5.701 MB
Minimum node memory  = 5.701 MB
Maximum node memory  = 5.701 MB

Memory per process   = 1.425 MB
Minimum proc memory  = 1.413 MB
Maximum proc memory  = 1.458 MB
```

If you use dplace to pin process, add *gm.x* after dplace:

```
mpiexec -np NN dplace -s1 gm.x ./a.out
```

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<http://www.nas.nasa.gov/hecc/support/kb/entry/220/?ajax=1>